IN THE CLAIMS

For the convenience of the Examiner, all pending claims of the Application are reproduced below regardless of whether amended or not.

~~[[1)]] 1. (Amended)~~ **An** ~~Autoprotected~~ **autoprotected** ~~optical communication ring~~ network, ~~including~~ **comprising:**

a first and a second optical carrier [[(2, 3)]] having opposite transmission directions**;** and

a plurality of optically reconfigurable nodes ~~(20a-20f)~~ optically connected along the first and [[the]] second optical ~~carrier~~ **carriers** [[(2, 3)]] and adapted to communicate in pairs by ~~means of~~ respective links susceptible [[of]] **to** ~~failure,~~ the ring network having a nominal operative condition in which the nodes of each [[pair]] **of the pairs** are optically configured so as to exchange optical signals on a respective working arc path at a respective first wavelength (λ_x) on the first carrier [[(2)]] and at a respective second wavelength (λ_y) different from said first wavelength (λ_x) on the second carrier [[(3)]], said respective working path having a complementary arc path defining a ~~respective~~ protection arc path in which the first wavelength (λ_x) on the first carrier [[(2)]] and the second wavelength (λ_y) on the second carrier [[(3)]] can be used for further links and the first wavelength (λ_x) on the second carrier [[(3)]] and the second wavelength (λ_y) on the first carrier [[(2)]] are reserved for protection~~, characterized in~~ **such** that the ring network has a failure operative condition in which the nodes terminating a ~~failured~~ **failed** link are optically reconfigured so as to exchange optical signals on the ~~respective~~ protection arc path at the respective second wavelength (λ_y) on the first carrier [[(2)]] and at the respective first wavelength (λ_x) on the second carrier [[(3)]]**, wherein the reconfiguration of one or more of the nodes reflects reconfiguration at a channel level associated with the ring network**.

[[2]]] ~~2. (Amended) The~~ [[Ring]] **ring** network ~~according to claim~~ **of Claim** ~~1, wherein~~ each of said plurality of reconfigurable nodes ~~(20a-20f)~~ is ~~adapted~~ **configured** to manage a predetermined subset of wavelengths within a set of transmission wavelengths, ~~($\lambda_1, \lambda_2, .., \lambda_N$)~~ and **wherein each of the nodes** includes a first and a second optical add/drop multiplexer [[(4, 5)]] **that may be** serially connected to said first and~~, respectively,~~ second ~~carrier~~ **carriers** [[(2, 3)]] **respectively in order** to ~~feed/extract~~ **communicate** said subset of wavelengths to[[/from]] said first and~~, respectively,~~ second ~~carrier~~ **carriers** ~~(2, 3), and to pass through the remaining wavelengths of the set of transmission wavelengths ($\lambda_1, \lambda_2, .., \lambda_N$)~~.

[[3)]] **3.** **(Amended)** **The** [[Ring]] **ring** network ~~according to claim~~ **of Claim** 1 [[or 2]], wherein said plurality of reconfigurable nodes ~~(20a-20f)~~ includes ~~at least~~ a signal input, ~~(IN_1, IN_2), at least~~ a signal output, ~~(OUT_1, OUT_2)~~ and a reconfigurable optical switch unit ~~(15; 15'; 15"; 115'; 115"; 215) selectively coupling~~ **operable to couple** said ~~at least an~~ signal input ~~(IN_1, IN_2)~~ and said ~~at least a~~ signal output ~~(OUT_1, OUT_2)~~ to said first and second carriers [[(2, 3)]] **respectively**.

[[4)]] **4.** **(Amended)** **The** [[Ring]] **ring** network ~~according to claim~~ **of Claim** 3, wherein said ~~at least a~~ signal input ~~(IN_1, IN_2)~~ is optically coupled to ~~a respective~~ **an** optical transmitter [[(TX_1)]] and said ~~at least a~~ signal output ~~(OUT_1, OUT_2)~~ is optically coupled to ~~a respective~~ **an** optical receiver [[(Rx_1)]].

[[5)]] **5.** **(Amended)** **The** [[Ring]] **ring** network ~~according to claim~~ **of Claim** 3 [[or 4]], wherein each of said plurality of reconfigurable nodes ~~(20a-20f)~~ includes information insertion devices ~~(TxTs) selectively~~ optically ~~connectable~~ **coupled** to said ~~at least a~~ signal input ~~(IN_1, IN_2)~~ and adapted to [[insert]] **position** ~~signalling~~ **signaling** information into **one or more** [[the]] optical signals ~~and information extraction devices (RxTs) selectively optically connectable to said at least a signal output (OUT_1, OUT_2) and adapted to extract signalling information from the optical signals~~.

[[6)]] **6.** **(Amended)** **The** [[Ring]] **ring** network ~~according to claim~~ **of Claim** ~~5~~, wherein said information insertion devices ~~(TxTs) and said information extraction devices (RxTs)~~ include optical transponders **operable to** optically ~~coupling~~ **couple** said optical switch unit ~~(15; 15'; 15"; 115'; 115"; 215)~~ to said first and second ~~carrier~~ **carriers**~~(2, 3) and adapted to change the signals wavelengths~~.

7) **7.** **(Amended)** **The** [[Ring]] **ring** network ~~according to claim~~ **of Claim** 3, wherein at least one of said reconfigurable nodes ~~(20a-20f)~~ includes ~~at least~~ a first signal ~~spitter~~ **splitter** ~~(222-225)~~ adapted to receive a signal from ~~either~~ **a selected one of** the first [[or]] **and** the second ~~carrier~~ **carriers** [[(2, 3)]] and to split said signal into a first and a second fraction ~~which are sent towards~~ **to be communicated** toward a ~~respective~~ signal output ~~(OUT_1, OUT_2) and towards the same carrier (2, 3), respectively~~.

[[8)]] **8.** **(Amended)** **The** [[Ring]] **ring** network ~~according to claim~~ **of Claim** [[3]] **7**, wherein ~~at least~~ **a selected** one **or more** of said reconfigurable nodes includes ~~at least~~ a second signal ~~spitter~~ **splitter** ~~(2:21, 226)~~ optically coupled to a ~~respective~~ signal input ~~(IN_1, IN_2)~~ and adapted to [[spit]] **split** a signal coming from the ~~respective~~ signal input ~~(IN_1, IN_2)~~ into a first and a second fraction ~~which are sent towards~~ **to be communicated toward** the first ~~carrier (2)~~ and [[the]] second ~~carrier~~ **carriers** [[(3),]] respectively.

9) **9.** **(Amended)** **The** [[Ring]] **ring** network ~~according to claim~~ **of Claim** 3, wherein said optical switch unit [[(215)]] includes ~~at least a~~ first switch ~~(231, 233, 235, 236)~~ having a first input **that is** optically coupled to a ~~respective~~ signal input ~~(IN_1, IN_2), a second input coupled to either the first or the second carrier (2, 3) and an output coupled to the same carrier (2, 3)~~.

10) **10.** **(Amended)** **The** [[Ring]] **ring** network ~~according to claim~~ **of Claim** [[8]] **9**, wherein said optical switch unit [[(215)]] includes ~~at least~~ a second switch ~~(232, 234)~~ having a first input **that is** coupled to the first carrier [[(2),]] and a second input **that is** coupled the second carrier [[(3)]], and ~~wherein~~ an output **of the second switch is** optically coupled to a ~~respective~~ signal output ~~(OUT_1, OUT_2)~~.

11) ~~**(Canceled)** Optical transmission system, including a first and a second ring network~~ according to claim 3, wherein a first reconfigurable node (D) of the first ring network has a signal input (IN_1, IN_2) which is optically coupled to a signal output (OUT_1, OUT_2) of a second reconfigurable node (D') of the second ring network.

12) **(Canceled)** Optical transmission system according to claim 11, wherein the second reconfigurable node (D') has a signal input (IN_1, IN_2) which is optically coupled to a signal output (OUT_1, OUT_2) of the first reconfigurable node (D).

13) **(Canceled)** Optical transmission system according to claim 11, wherein a third reconfigurable node (E) of the first ring network has a signal input (IN_1, IN_2) which is optically coupled to a signal output (OUT_1, OUT_2) of a fourth reconfigurable node (E') of the second ring network, and the fourth reconfigurable node (E') has a signal input (IN_1, IN_2) which is optically coupled to a signal output (OUT_1, OUT_2) of the third reconfigurable node (E).

14) **14. (Amended)** ~~A method~~ ~~Method to autoprotect an optical~~ ring network, said ring network including a first and a second optical carrier having opposite transmission directions and a plurality of nodes optically connected along the first and the second optical ~~carrier~~ **carriers** and adapted to communicate in pairs in order to define bidirectional links, each [[pair]] **of the pairs** including a first and a second link termination node adapted to mutually communicate at respective first and second wavelengths, the method ~~including~~ **comprising**:

exchanging signals between the first and the second link termination [[node]] **nodes** ~~of each pair~~ on a ~~respective~~ working arc path of said ring network by using the ~~respective~~ first wavelength on the first carrier and the ~~respective~~ second wavelength on the second carrier[[;]], said ~~respective~~ working path having a complementary arc path defining a ~~respective~~ protection arc path in which the first wavelength on the first carrier and the second wavelength on the second carrier can be used for further links**, wherein** [[and]] the first wavelength on the second carrier and the second wavelength on the first carrier are reserved for protection;

checking if a failure is present in the ring network producing ~~at least~~ a ~~failured~~ **failed** link; and

optically reconfiguring, in the presence of [[a]] **the** failure, the link terminating nodes of said ~~at least a failured~~ **failed** link so that ~~they exchange~~ signals **may be exchanged** on the ~~respective~~ protection arc path by using the ~~respective~~ first wavelength on the second carrier and the ~~respective~~ first wavelength on the second carrier**, wherein the reconfiguration of one or more of the nodes reflects reconfiguration at a channel level associated with the ring network**.

15) **15. (Amended)** **The method** ~~Method according to claim~~ **of Claim** 14, wherein each node of said plurality of nodes is adapted to manage a predetermined subset of wavelengths within a set of transmission wavelengths carried by the first and the second ~~carrier~~ **carriers**, said step of exchanging including ~~optically separating, at~~ each node of said plurality of nodes, each wavelength of the ~~respective~~ subset of wavelengths from [[the]] **a** set of transmission wavelengths.

[[~~16~~]] **16.** **(Amended)** **The method** ~~Method according to claim~~ **of Claim** 14, ~~including the steps of~~ **further comprising:**

inserting a signal into one of said nodes[[,]]**;**

splitting said signal into a first and a second fraction**;** and

sending said first fraction ~~towards~~ **toward** the ~~first~~ carrier and the second [[power]] fraction ~~towards~~ **toward** the second carrier.

[[17)]] **17.** **(Amended)** **The method** ~~Method according to claim~~ **of Claim** 14, ~~including the steps of~~ **further comprising:**

receiving a signal in one of said nodes from either the first or the second carrier[[,]]**;**

splitting said signal into a first and a second fraction**; and**

sending the first **fraction** ~~towards~~ **toward** the same carrier and the second fraction towards a signal output of said node.

18) **(Canceled)** Method according to claim 14, wherein the step of checking includes verifying, in each node of said plurality of nodes and for each wavelength of the respective set of wavelengths, if signals are received.

19) **(Canceled)** Method according to claim 14, wherein said step of checking includes verifying, in each node of said plurality of nodes and for each wavelength of the respective set of wavelengths, if signals are received degraded.

20) **(Canceled)** Method according to claim 14, wherein said step of checking includes verifying, in each node of said plurality of nodes and for each wavelength of the respective set of wavelengths, if signals include a failure message.

21) ~~21.~~ ~~(Amended)~~ ~~The method~~ ~~Method according to claim~~ **of Claim** 14, further ~~including~~ **comprising:**

transmitting a failure message from [[a]] **the** first ~~link~~ termination node ~~of a pair~~ to [[a]] **the** second link termination node ~~of the same pair~~ if a signal transmitted from the second link termination node to the ~~first link~~ termination node is not received[[,]] or is ~~received~~ degraded~~, by the first link termination node~~.

~~[[22)]]~~ **22.** **(Amended)** **The method** ~~Method according to claim~~ **of Claim** ~~14, wherein said~~ step of **optically** reconfiguring includes switching optical connections [[which]] **that** selectively couple ~~at least~~ an optical transmitter and an optical receiver to said first and second ~~carrier~~ **carriers respectively**.

[[23)]] **23.** **(Amended)** **The method** ~~Method according to claim 15~~ **of Claim 14**, wherein the step of exchanging **signals** includes ~~feeding at each of said plurality of nodes~~ the ~~corresponding subset of wavelengths to said first and, respectively, second carrier.~~ **following steps executed in the first link termination node:**

generating an optical signal carrying information;

converting the optical signal into an electrical signal;

adding information to the electrical signal;

reconverting the electrical signal into an optical signal provided with a predetermined wavelength adapted for transmission; and

communicating the optical signal at the predetermined wavelength to a selected one of the first and the second ~~carriers.~~

[[24)]] **24.** ~~**(Amended) The method** Method according to claim~~ **of Claim** 14, wherein ~~the~~ step of exchanging signals includes the following steps executed in the [[first]] **second** link termination node ~~of a pair~~:

~~generating an optical signal carrying an information;~~

~~converting the optical signal in a electrical signal;~~

~~adding to the electrical signal further information;~~

~~reconverting the electrical signal in an optical signal provided with a predetermined wavelength adapted for transmission; and~~

~~feeding the optical signal at the predetermined wavelength to either the first or the second carrier;~~

~~and the following steps executed in the second link termination node of the same pair:~~

receiving the optical signal at the predetermined wavelength from ~~either~~ **a selected one of** the first [[or]] **and** the second ~~carrier~~ **carriers**;

converting the optical signal at the predetermined wavelength [[in]] **into** an electrical signal;

extracting **information** from the electrical signal ~~the further information~~;

reconverting the electrical signal [[in]] **into** an optical signal with a wavelength adapted for reception; and

receiving the optical signal with the wavelength adapted for reception.

25) **(Canceled)** Reconfigurable node for an autoprotected optical communication ring network, comprising a receiving/transmitting module (6) including:

- a signal input (IN_1) for the insertion into the node of a signal including information to be transmitted in the network;
- a signal output (OUT_1) for the extraction from the node of a signal including information transmitted in the network;
- a first transmitting transponder ($TxT_1(\lambda_x)$) for optically coupling to a first carrier (2) of the network and adapted to modulate a signal at a first wavelength (λ_x);
- a second transmitting transponder ($TxT_1(\lambda_y)$) for optically coupling to the first carrier (2) and adapted to modulate a signal at a second wavelength (λ_y);
- a third transmitting transponder ($TxT_2(\lambda_x)$) for optically coupling to a second carrier (3) of the network and adapted to modulate a signal at the first wavelength (λ_x);
- a first receiving transponder ($RxT_2(\lambda_x)$ for optically coupling to the second carrier (3) and adapted to demodulate a signal having the first wavelength (λ_x);
- a second receiving transponder ($RxT_2(\lambda_y)$) for optically coupling to the first carrier (2) and adapted to demodulate a signal having the second wavelength (λ_y);
- a third receiving transponder ($RxT_1(\lambda_y)$) for optically coupling to the second carrier (3) and adapted to demodulate a signal having the second wavelength (λ_y);
- reconfigurable optical connections (22-25; 31-38; 41-48; 131-136; 141-146; 231-236) to selectively connect:
  - the signal input (IN_1) either to the first transmitting transponder ($TxT_1(\lambda_x)$) to the third transmitting transponder ($TxT_2(\lambda_x)$);
  - the first receiving transponder ($RxT_2(\lambda_x)$) the third transmitting transponder ($TxT_2(\lambda_x)$);
  - the second receiving transponder ($RxT_2(\lambda_y)$) the signal output (OUT_1); and
  - the third receiving transponder ($RxT_1(\lambda_y)$) either to the signal output (OUT_1) or to the second transmitting transponder ($TxT_1(\lambda_y)$)

26) **(Canceled)** Reconfigurable node according to claim 25, wherein the receiving/transmitting module (6) further includes:

- a further signal input (IN_2) for the insertion into the node of a signal including information to be transmitted in the network;
- a further signal output (OUT_2) for the extraction from the node of a signal including information transmitted in the network;
- a fourth transmitting transponder ($TxT_2(\lambda_y)$) optically coupled to the second carrier (3) and adapted to modulate a signal at the second wavelength (λ_y); and
- a fourth receiving transponder ($RxT_1(\lambda_x)$) optically coupled to the first carrier (2) and adapted to demodulate a signal having the first wavelength (λ_x);

said reconfigurable optical connections (22-25; 31-38; 41-48; 131-136; 141-146; 231-236) selectively connecting:

- the first receiving transponder ($RxT_2(\lambda_x)$) either to the third transmitting transponder ($TxT_2(\lambda_x)$) or to the further signal output (OUT_2);
- the fourth receiving transponder ($RxT_1(\lambda_x)$) to the further signal output (OUT_2); and
- the further signal input (IN_2) either to the second transmitting transponder ($TxT_1(\lambda_y)$) to the fourth transmitting transponder ($TxT_2(\lambda_x)$).

27) **(Canceled)** Reconfigurable node according to claim 25 or 26, characterized in that it is adapted to manage a predetermined set of wavelengths within a set of transmission wavelengths ($\lambda_1, \lambda_2, .., \lambda_N$) and in that it includes a first and a second optical add/drop multiplexer (4, 5) optically coupling the receiving/transmitting module (6) to said first and, respectively, second carrier (2, 3) to feed/extract said subset of wavelengths to/from said first and, respectively, second carrier (2, 3), and to pass-through the remaining wavelengths of the set of transmission wavelengths ($\lambda_1, \lambda_2, .., \lambda_N$).

28) **(Canceled)** Reconfigurable node according to claim 25 or 26, further including at least a first optical power splitter (221) for splitting signals coming from said at least a signal input (IN_1) and at least a second optical power splitter (222-225) for splitting signals coming from a respective one of said receiving transponders (RxTs).

29) **(Canceled)** Reconfigurable node according to claim 25 or 26, wherein the reconfigurable optical connections (22-25) include 2x2 switches.

30) **(Canceled)** Reconfigurable node according to claim 25 or 26, wherein the reconfigurable optical connections (31-38; 41-48; 131-136; 141-146; 231-236) include 1x2 and/or 2x1 switches.

31) **(Canceled)** Reconfigurable node according to claim 25 or 26, wherein the reconfigurable optical connections (22-25; 31-38; 41-48; 131-136; 141-146; 231-236) include discrete switching components.

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32) **(Canceled)** Reconfigurable node according to claim 25 or 26, wherein the reconfigurable optical connections (22-25; 31-38; 41-48; 131-136; 141-146; 231-236) include an integrated switching matrix.

33) **(Canceled)** Reconfigurable node according to claim 25 or 26, wherein the reconfigurable optical connections (22-25; 31-38; 41-48; 131-136; 141-146; 231-236) include optical switching components selectable in the group including:

- opto-mechanical switches;
- thermo-optical switches;
- magneto-optical switches;
- liquid crystal switches;
- semiconductor switches;
- electro-optical switches;
- micro-mechanical switches; and
- lithium niobate integrated circuit switches.

34) **(Canceled)** Reconfigurable node according to claim 25 or 26, characterized in that it includes a control processing unit (16) operatively connected to said receiving transponders (RxTs) and said transmitting transponders (TxTs).

35) **(Canceled)** Reconfigurable node according to claim 25 or 26, characterized in that it includes at least a further receiving/transmitting module which has substantially the same structure of said receiving/transmitting module (6) and is adapted to operate with a different pair of wavelengths with respect to said receiving/transmitting module (6).